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SCIENCE NEWS LETTER

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DETROIT

THE WEEKLY SUMMARY OF CURRENT SCIENCE



New Flower Faces

See Page 234

A SCIENCE SERVICE PUBLICATION

The battle of the atoms

Telephone equipment is constantly at war against invisible forces of nature which seek to take it apart, atom by atom. On all fronts, Bell Laboratories chemists must fight corrosion—an enemy able to make a telephone circuit noisy or perhaps to sever it altogether.

An example: for years lead cable had lain protected in wooden ducts. Then in certain areas something began to eat the sheath, exposing wires to moisture. Corrosion chemists of the Laboratories were called in. The corrosion, they found, came from acetic acid generated in the wood during the preservative treatment then in use. They pumped in neutralizing ammonia. Corrosion stopped. Now telephone duct wood is controlled for acidity.

In a large city, smoke-polluted air was coating the silver surfaces of contacts with sulphide. Noisy circuits resulted. Chemists discovered minute traces of sulphur vapor in the air. They filtered incoming air with activated charcoal. Today, the latest telephone contacts are of palladium—not affected by sulphur.

Corrosion in metals is only one type of deterioration which engages Bell chemists against hostile forces. Plastics, paper, metals, rubber, textiles, coils, waxes and woods all have enemies. But knowledge, and persistence, are steadily winning out—to the benefit of the telephone user.

A Bell Laboratories corrosion engineer examining samples during an exposure test on corrosion-resistant finishes and alloys.



BELL TELEPHONE LABORATORIES



EXPLORING AND INVENTING, DEVISING AND
PERFECTING FOR CONTINUED IMPROVEMENTS
AND ECONOMIES IN TELEPHONE SERVICE

ASTRONOMY

Noise Heats Sun's Corona

Extreme temperatures of the sun's outer envelope may be due to the unheard noise of giant bubbles bursting on the surface of the sun.

► UNHEARD noise of giant bubbles bursting on the surface of the sun may help explain the heat of the sun's famed corona, outer envelope visible during a total solar eclipse.

This flaming layer of gas, extending thousands of miles beyond the surface of the sun that we normally see, is itself many times hotter than this solar surface.

The new theory that a stream of sound waves of inaudibly low frequency keeps up the high temperature of the corona—estimated at a million degrees—has been proposed by Dr. Martin Schwarzschild of Princeton University Observatory.

Photographs of the sun taken with high-powered telescopes reveal its surface to be thickly strewn with bright granules or gas bubbles. These bubbles, hundreds of miles across, exist but a few minutes. At any time about one-tenth of the sun's surface is covered with rising bubbles.

This tremendous bubbling of gases produces subsonic noise. But even if you could solve the transportation problem and survive the intense heat of the sun, you would not be able to hear it. The noise is of the same type as the "silent" sound of huge ocean swells, which, unlike the crashing of waves, you cannot hear. Outside the range of human ears, it may carry mechanical energy.

This steady stream of compression

waves, originating in the turbulent motions of the granules, passes upward through the photosphere or sun's visible surface. This region of the sun, however, is not visibly affected by the compression waves passing through it. Thus its presence is not betrayed in photographs of the sun.

When the noise reaches the less-dense region of the corona, its mechanical energy is converted into heat. The region through which it passes unnoticed, from the top of the granulation to the base of the corona, is about 500 miles wide.

"It appears likely that the energy stream in the noise produced by the turbulence of the granulation is sufficient in size to offset the heat loss of the corona," Dr. Schwarzschild explains in the *Astrophysical Journal* (Jan.).

Even though the noise carries into the higher layers of the corona only a small fraction of the energy of the granules, it is enough to provide the heat necessary for maintaining its high temperatures, Dr. Schwarzschild calculates.

How the high temperature of the corona, many times greater than that of the sun's visible surface, could be maintained has been one of the sun's mysteries. Dr. Schwarzschild believes that the noise of the sun's bubbling surface, flowing hundreds of miles out into space, may supply the corona with its great heat.

Science News Letter, April 10, 1948

Although development of this improved instrument has been thought possible for a year or so, it has only now been proved "to be really good," Dr. Kron stated.

In the past few years new developments have made it possible to reach out and record much fainter light at the blue end of the spectrum's red end. Now astronomers can work as effectively with near infra-red light.

The new infra-red photoelectric photometer works much more effectively at room temperature than such instruments did in the past when dry ice or some other refrigerant was used. Chilled with dry ice, its usefulness would be further improved.

The modification that made the instrument practical was actually that of cutting down the circuit's capacity. This reduced the time required for the star's brightness to be indicated.

In the new instrument, a resistor of ten billion ohms is used. To improve the instrument's seeing ability, a resistor of a thousand billion ohms was desired. But by this change, the indication time was slowed down from 10 seconds to 1,000 seconds.

To overcome this, all but 1 per cent of the electrical capacity of the entire circuit was cancelled by an electrical method.

Science News Letter, April 10, 1948

ASTRONOMY

Infra-Red Detected

► THE world's most sensitive instrument for detecting light in the near infra-red region of the spectrum of the sun or a star has been developed at Mt. Hamilton, Calif.

After a trial of several months, the effectiveness of the instrument has been proved beyond a doubt, Dr. Gerald E. Kron of Lick Observatory stated.

A modification in the circuit of the photoelectric photometer, used for detecting light too deep red for the eye to see, has made this possible. The only instrument of its kind is being used at

Lick Observatory of the University of California to study how much a star's light changes when one member of a two-star team comes between us and its companion. Another of these instruments is being built at Yerkes Observatory of the University of Chicago.

By only a minor change, the effectiveness of the photoelectric cell in the near infra-red region of the spectrum has been extended two magnitudes. This means it can record light only one-sixth as bright as was possible before with the best equipment.



DARING YOUNG APES—Shipped by air from Bangkok, Siam, to the San Diego Zoo, these gibbons are the smallest of the apes and are famed as the world's greatest aerial performers. Some zoologists rate these long-armed apes as the nearest approach to man among animals.

GENERAL SCIENCE

Science Bill Provisions

Third National Science Foundation measure provides that director and members be appointed by the President, confirmed by the Senate.

► HERE'S what the National Science Foundation will be like if both Congress and the President approve the identical S. 2385 and H.R. 6007 bills, a third try at enactment in three years:

There will be 24 members appointed by the President and confirmed by the Senate, who will serve for six-year terms.

A director, also a presidential appointee, is the most powerful person in the proposed setup, exercising powers of the proposed act within the general policies developed by the foundation. Last session President Truman vetoed the bill that provided the director should be elected by the foundation.

An executive committee consisting of the director and nine foundation members is charged with implementing the foundation policies.

The foundation would "develop and encourage the pursuit of a national policy for the promotion of basic research and education in the sciences." It is authorized to initiate and support basic scientific research in the mathematical, physical, medical, biological, engineering and other sciences by making grants, loans and other forms of assistance for the conduct of basic scientific research. It would appraise the impact of research upon industrial development and upon the general welfare.

Although a provision for a division of national defense, contained in last year's bill, has been eliminated, the foundation would initiate and support scientific research on national defense matters, after consultation with the Secretary of Defense.

Four divisions are specified, but the foundation may establish other divisions it finds necessary. Those specified in the bill are: Division of medical research, division of mathematical, physical and engineering sciences, division of biological sciences, division of scientific personnel and education.

The personnel and education division would handle the granting of scholarships and fellowships and would also be a central clearing house for information on scientific and technical personnel, maintaining a register of scientists and engineers.

Special commissions of 11 persons, five non-scientists and six scientists, are to be established to survey research in special fields and recommend over-all research programs. Three such special commissions on cancer, heart and intravascular diseases and poliomyelitis are specified in the bill, but the foundation may establish other special commissions from time to time.

Interchange of scientific information among scientists in the United States and foreign countries would be undertaken and through the Secretary of State arrangements could be made to aid research in foreign countries.

The foundation itself would not have authority to operate laboratories or pilot plants, but wide discretion is given by the bill to use appropriations for basic research work by organizations, government and private here and abroad, and individuals. Strengthening of research staffs of nonprofit organizations is specially mentioned. Any atomic energy research would be undertaken with the consent of the Atomic Energy Commission.

An interdepartmental committee of science criticized in the veto of last year's bill has been dropped.

Patent rights are left to the discretion of the foundation, as they were in last year's bill.

No money would be appropriated by the bill establishing the foundation, but organization would be possible immediately upon enactment of the legislation through transfer of funds from some governmental scientific or technical agency. The 1949 Presidential budget recommended \$20,000,000 for the first year of the foundation.

Science News Letter, April 10, 1948

GENERAL SCIENCE

U. S. Aid Suggested for Postwar German Science

► "SEVERAL foes of democracy or advocates of revenge have regained prominent educational positions" in Germany, an atomic scientist has charged in an appeal for American aid to German science.

Dr. Samuel A. Goudsmit of the Brookhaven National Laboratory described the situation in German scientific circles as "deteriorating rapidly." Dr. Goudsmit is the author of *Alsos*, a book describing the Nazi atomic research program.

Writing in the *Bulletin of the Atomic Scientists* (April), he declared that U. S. foreign policy should include both moral and material support for postwar German science. He called on scientists in this country to urge government action in aiding scientific work in Germany.

Promotion of the exchange of scientific literature with Germany and grants and supplies for German research were suggested by Dr. Goudsmit.

He urged American scientists to take greater interest in the situation.

Science News Letter, April 10, 1948

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GENERAL SCIENCE

Protest Loyalty Procedures

Scientists protest investigations into their political beliefs even when their research has no connection with the government.

► MANY scientists "are concerned over allegedly arbitrary dismissals of certain of their colleagues," a report on loyalty clearance procedures in research laboratories by a committee of the Federation of American Scientists has charged.

"Scientists who used to consider that their positions depended only on the value of their scientific work, now find that their political beliefs are also being investigated, even when their research has no connection with the government," the Federation's Committee on Secrecy and Clearance declared.

The report complained that laws and regulations for clearance procedures offer "few safeguards against mistakes or arbitrary abuses."

Clearance problems are threatening to cost the nation's atomic energy program and military research work the services of valuable scientists, the group concluded.

Members of the committee, all Cornell University scientists, include one of the world's best-known atomic scientists, Dr. Hans A. Bethe, and a Nobel prize winner, Dr. P. J. W. Debye, chairman of the department of chemistry at Cornell. Dr. S. H. Bauer is chairman of the group, which includes Drs. L. M. Brown, G. K. Fraenkel, A. R. Moore, P. Morrison, R. S. Rochlin and R. R. Wilson. Their report was published in both *Science* (April 2) and the *Bulletin of the Atomic Scientists* (April).

The scientists sent questionnaires on loyalty clearance to 140 laboratories and received 57 replies, the report stated.

In laboratories of the Atomic Energy Commission, the committee found that clearances may be costing the Commission the services of loyal scientists.

"We have learned that many loyal scientists, lacking either knowledge of the criteria for clearance or confidence in the fairness of their application, have considered leaving the employ of the Commission for positions where they would be secure against unfounded accusations," the report said.

"Others, not now employed by the AEC, hesitate to apply for such positions for similar reasons.

"To the extent that this has occurred or may occur, the nation's atomic energy research will be impaired," the committee cautioned.

They said the clearance problem was "especially acute" in atomic laboratories where non-secret work was going on, but scientists were required to have "some type of clearance."

Warning against an "atmosphere of fear and uncertainty," the report asserted this "may cause many scientists to withdraw entirely from any type of civic responsibility."

The Atomic Energy Commission, it was pointed out, has appointed a Personnel Security Review Board, headed by Owen J. Roberts, former associate justice of the Supreme Court, to help solve clearance problems.

Military laboratories, the committee reported, were least willing to reply to the questions on clearance, while individuals dismissed from these laboratories charged that they had not been given a fair hearing.

"It may be assumed," the report declared, "that military officials have little interest in safeguarding their employees or employees of their contractors against unfounded charges.

"This may help explain why these laboratories are having difficulty in obtaining and holding scientific personnel."

Clearance regulations apply in other government laboratories and even in some industrial and university laboratories where scientists are not doing secret work, the report said.

The committee cited resolutions of the Federation calling for no "loyalty check"



MIRRORS AID PLANE PRODUCTION—A new industrial tool, mirrors, now plays a vital part in design, production and testing of modern airplanes. Used to measure and check accuracy of small tools and parts, this mirror magnifies the silhouette of the tested article, in this case, the threads of a screw.

on scientists doing work which is not classified, and that scientists be given a hearing in loyalty cases.

"The files of this committee contain many letters from biologists, chemists, engineers and physicists unable to learn why they are subjected to the financial loss and personal embarrassment of clearance denial.

"The letters often contain lengthy introspective passages on their belief in democracy and their frustration at being unable to speak on their own behalf," the report said.

The group of Cornell scientists said that the report was a summary. A more detailed statement of some clearance problems is now being prepared by the Federation committee, it was learned.

Science News Letter, April 10, 1948

GENERAL SCIENCE

Dr. Condon Is Defended

► REQUESTING that distinguished scientists be permitted to testify and that Dr. Edward U. Condon, director of the National Bureau of Standards, be given an opportunity to cross-examine witnesses, attorneys for Dr. Condon have sent a letter to the House Committee

on Un-American Activities regarding the hearing scheduled by the committee for April 21.

The letter from the attorneys, the firm of Arnold, Fortas and Porter, was signed by the three partners: Thurman Arnold, former assistant U. S. Attorney General;

Abe Fortas, former Under Secretary of the Interior; and Paul Porter, former administrator of the Office of Price Administration. They declared in part:

"The effect of the publication of your accusations against Dr. Condon, and of the inflammatory and reckless manner in which that was done, may be devastating to the national interest. There is abundant evidence that it has impaired the security and peace of mind of practically all of the leading scientists who are now employed on atomic bomb, radar, and related projects of fundamental importance to our security. Your actions must inevitably cause scientists to hesitate to accept work in these fields; and they will doubtless tempt scientists now employed in these activities to seek other work of less national importance where their reputations will not be exposed to irresponsible attack, and their civil rights will be safe.

"In fact, we respectfully suggest that the practices of your Committee may be retarding the scientific research which is the most vital part of our defense program.

"The number of scientists qualified for the exacting work required on many crucial projects is small. The need for their services at this critical point in history is great. Hitler drove out of Germany the very men qualified to discover the atomic bomb. Among them were Albert Einstein, Leo Szilard, James Franck, Hans A. Bethe, Otto Stern and others, who came to this country and made possible our development of the atomic bomb. Mussolini drove Enrico Fermi out of Italy. Dr. Fermi is now one of our most distinguished atomic scientists. The Com-

munist persecuted George Gamow, and forced him to flee the Soviet Union. Dr. Gamow is now one of our great nuclear physicists.

"These men and many others, including outstanding native American scientists like Dr. Condon, now have reason to wonder whether they will be allowed to work in this country, free from molestation.

"Nothing can serve the ends of Communism today better than the intimidation of American scientific personnel through such tactics as your Committee has followed in the Condon case to date. This Committee must avoid becoming an unconscious instrument of Communist purposes.

"We therefore respectfully suggest that the Committee exercise extreme care in proceedings involving this country's critically important scientific program and, further, that you avoid the possibility that your activities might aid and abet the very forces you seek to combat—namely, Communism and the apparent effort of its agents to create disunity and confusion in this nation."

Enclosed with the letter to the committee was a copy of an invitation letter sent out by Dr. Harold C. Urey, Nobelist in chemistry at the University of Chicago, as chairman of the Dinner to Edward U. Condon Committee. The dinner will be held "as a testimony of confidence by his scientific colleagues" in New York City, April 12. Sponsors of the dinner are more than 100 American leaders in various fields of science.

Science News Letter, April 10, 1948

pose. WHO is not asking for more than \$6,000,000 from all its members combined for an entire year's work. And through WHO we and other nations could help Mexico wipe out smallpox so that the 6,000,000 persons who cross the border into our country each year would not be able to bring smallpox in with them.

Starvation and hunger in Europe, which is costing us in food, money, and worry over the danger of hunger-caused revolts and war, is directly tied up with the international health situation. There would be far fewer undernourished and starving men, women and children in Europe today if there were not so many people sick with malaria in other parts of the world.

Every year there are some 300,000,000 people in the world sick with malaria. About 3,000,000 die of it each year. Most of the world's malaria is in the world's bread basket areas. In India, China, and other agricultural regions of the world, the people are too weakened by malaria to work hard at farming, too sickly to learn modern methods of agriculture that would increase the yield of food for themselves and the rest of the hungry world. And they lack the strength and mental alertness to free themselves of this disease that drags them down.

Through WHO we could help them to wipe out malaria. Aside from humanitarian reasons, the financial outlay would be more than repaid in the reduced contribution we would have to make to feeding the world.

Our own health is in danger because of our failure to join and support WHO. Present-day quarantine methods can not be counted on to protect us from foreign diseases. Our health frontiers extend as far as our planes can fly. With India only 48 hours away, both plague and cholera can get into Chicago or other midwestern cities before any symptoms develop in the traveller importing it.

The only way we can protect ourselves from these diseases today is by helping to stamp them out at their source, in Egypt or China or India or anywhere else on the globe. Without help from an international organization, such as WHO, these nations cannot do the job. Without the help of our technical knowledge and financial support, WHO cannot do this important job effectively.

Commerce already is being aided by WHO's interim commission, just as that organization helped stop the spread of cholera from Egypt last winter. Its Singa-

PUBLIC HEALTH

U. S. Urged to Join WHO

Membership in the World Health Organization would offer the United States many advantages. Russia is now 24th member of this group.

► FAILURE of the United States to join the World Health Organization will be costly in health and money to the people of this nation.

We shall be letting the Kremlin outsmart us, instead of the other way around, if we fail to join, now that Russia has become the 24th member of WHO. We shall be denying ourselves a voice in deciding where WHO headquarters shall be located, who shall be its secretary general, what its policies and activities shall be.

A bill enabling us to join this organization was passed unanimously by the Senate last July. That same month the House Foreign Affairs Committee unanimously reported out the companion House bill. Medical, nursing, and other health organizations and organizations interested in furthering world coopera-

tion and world peace have united in support of the measure. But in spite of this support, and even because of it according to some rumors going the rounds in Washington, the House Rules Committee has tabled the bill indefinitely. This stops further action on the bill for this session of Congress, unless the committee can be induced to reconsider it.

To get an idea of the dollars and cents loss to the United States from failure to join WHO, you don't have to go any farther than the smallpox scare in New York last spring. One bus passenger with unsuspected smallpox crossing the border from Mexico cost Americans at least \$6,000,000. That sum is the estimated amount spent in New York City alone for vaccinations to stop an incipient smallpox epidemic. More money was spent in other cities for the same pur-

pore station broadcasts daily to ships at sea, informing them of health conditions in various ports, so they know each day which ones can be entered safely and without financial loss due to quarantine delays.

Better protection against cholera is another immediate benefit coming from WHO's interim commission. The Egyptian experience showed that anti-cholera vaccines from various parts of the world varied greatly in potency. An international standard is now being set up through WHO.

MEDICINE

Starve Malaria Germs

Malaria germs cannot grow and reproduce without methionine. Conquest of malaria would help stop starvation throughout the world.

► **DRUGS** to stop malaria by starving the germs may come as a result of research by Drs. Ralph W. McKee and Quentin M. Geiman of Harvard Medical School in Boston.

The germ-starvation treatment, if it can be developed to a practical point, will help stop starvation and undernutrition in humans the world over, even in regions where there is no malaria. Much more food could be grown on a world basis if there were not so many hundreds of millions of malaria-weakened people in agricultural regions of the world.

The possibility of the germ-starvation conquest of malaria comes from the discovery that malaria germs cannot grow and reproduce without methionine. This

Streptomycin, and other new disease remedies from molds and germs, will also get international standardization through WHO. Patriotic Americans may feel a little unhappy if our scientists can have no part in standardizing the life-saving drug that we gave the world.

These are some of the more selfish reasons for our joining WHO. Americans who have always been ready to help unfortunate people anywhere know for themselves the unselfish reasons for joining an organization devoted to promoting world health.

Science News Letter, April 10, 1948

chemical is one of the protein building blocks, needed by man as well as malaria parasites. The malaria germs get the chemical from the blood plasma surrounding the red blood cells in which the germs live.

Growth of the germs in the test tube can be stopped by chemicals that are enough like methionine to fool the germs but which can not be used by them for growth and reproduction. Or other chemicals which react with methionine to stop it as a protein builder might be used.

Trial of such compounds in monkeys with malaria and search for other chemicals required by the germs is continuing.

Science News Letter, April 10, 1948

GEOLOGY

Earth's Crust Redated

► **ROCKS** and meteorites may be only about half the age that scientists have estimated in the past, thanks to the discovery that cosmic rays continuously generate within them helium gas that has been used as a geological calendar.

This means that a meteorite that was supposed to have fallen 100,000,000 years ago probably is only half that age.

This redating of the earth's crust arises from the research in South Africa by Prof. H. E. Huntley of the University of Witwatersrand, Johannesburg.

In photographic plates exposed on a

11,000-foot mountain peak to capture cosmic rays bombarding the earth from outer space, Prof. Huntley found that in the glass base of the plates the radiation disintegrates the glass atoms and produces helium at a considerable rate, at least 100,000 atoms per cubic centimeter each year.

Helium found generally in rocks has been attributed to radioactive minerals found throughout the earth's crust which also produce helium. This allowed scientists to set up a time-scale based on helium content.

If both the radioactive material in the rocks and the cosmic rays produce helium at about the same rate, then the ages assigned to rocks may have to be cut about in half. But the usual rocks are still many millions of years old.

Science News Letter, April 10, 1948

AERONAUTICS

Giant Guillotine Chops Obsolete Airplanes

► A **GIANT** guillotine with a three-ton blade is busy daily at the Naval Air Station in Norfolk, Va., chopping obsolete and wrecked airplanes into sections so that the metals may be salvaged.

When the great knife is dropped 26 feet from the top of its standard, its force is enough to make a clean cut through the fuselage, wing or tail sections of a discarded plane, resulting in pieces small enough to put in melting pots for reduction to ingots. The blade of the guillotine is raised by electric power; it falls by gravity. The machine can handle 16 planes per day.

The salvage materials obtained from planes consist of heavy steel, light iron, aluminum, condemned tires, instruments and miscellaneous items. Reusable accessories are kept for future applications. All scrap batteries or other material containing lead are stockpiled for future military use.

Science News Letter, April 10, 1948



GUILLOTINE OF PLANES—Wrecked airplanes are chopped into scrap by this giant guillotine. The three-ton blade is raised by electric power, dropped by gravity.

ORNITHOLOGY

Lost Birds Find Home by Exploration Not Instinct

► BIRDS turned loose in a strange place far from home do not fly straight to their nests, guided by some mysterious instinct or some hidden sense that we earthlings wot not of. They cruise in curving lines, with a suggestion of spiralling, apparently getting home by plain ordinary exploration.

This is the conclusion reached as the result of experiments by two Cornell University ornithologists, Drs. Donald R. Griffin and Raymond J. Hock, whose report appears in *Science* (April 2).

The two men chose gannets for their tests, because these big white sea birds are easily seen at a distance, and because it was safe to assume that they had never of their own accord gone far from the coast. They carried a number of them into the interior of the Canadian maritime province of New Brunswick, where they turned them loose to find their own way home. Half of them they followed in an airplane, at a respectful height and distance; the rest they left unaccompanied, to see if the presence of the plane was a disturbing factor.

Only two of the birds flew in anything like a straight line for the coast, and both of these turned at right angles before they reached the shores of the Bay of Fundy. The others flew literally in all directions, making many turns and loops. There was no evidence whatever of a preternatural "sense of direction."

First gannet to get home arrived at its nest in 24 hours; others required up to 70 hours. Four failed to get back at all.

Average distance travelled in one day was 99 miles. This compares with a high of 141 miles for the swallow and a low of 17 for the starling.

Science News Letter, April 10, 1948

ANTHROPOLOGY

Eskimos and Indians Have Similar Blood Patterns

► ESKIMOS and Indians are closely related; in fact, Eskimos once were Indians. So declared Dr. Victor E. Levine of Creighton University in an address before the meeting of the American Association of Physical Anthropologists in Washington.

Dr. Levine's conclusions are based mainly on the close similarity between the blood group patterns of the two peoples. Eskimos and Indians alike have

the Rh factor in practically 100% of their numbers, and again are very nearly lacking in the N blood type. Both peoples have some blood-type resemblances to Chinese and Japanese, but differ from Asiatics in the same way.

Ideas on blood-relationship between Eskimos and Indians are supported also by studies of their present culture traits and by the archaeology of their ancient dwelling sites.

The general opinion, Dr. Levine stated, is that Eskimos originated as inland Indians, and later moved to their present home area along the Arctic ocean.

Science News Letter, April 10, 1948

MEDICINE

New Clinic to Study Multiple Sclerosis

► A NEW clinic for study of the baffling nerve disease, multiple sclerosis, opened at Beth Israel and Boston State Hospitals March 29.

The role of minerals, diet, and hormones, the effects of blood-vessel-dilating drugs, the spontaneous remissions and other changes in symptoms during the course of the disease and its geographic distribution in Massachusetts and New England will be subjects of study at the clinic.

Establishment of this clinic was made possible by a grant from the National Multiple Sclerosis Society which has headquarters in New York City. The Boston clinic is the first of several planned by the society. Another will soon be opened at Albany, N. Y., Hospital.

Science News Letter, April 10, 1948

GENETICS

Favorable Mutation Found in Snapdragons

► A MUTATION, or sudden evolutionary change, that gives its possessor an advantage in the struggle for survival has been found in snapdragon plants by two Austrian botanists, Drs. R. Biebl and M. Sturm of the University of Vienna. One objection to the mutation theory has been that practically all mutations are either deadly or at least disadvantageous.

The new snapdragon plants have the minute breathing-pores in their leaves so modified that water evaporates through them considerably more slowly than it does through the wider-open pores of the parent species. This gives the new plants better resistance to drought.

Science News Letter, April 10, 1948

IN SCIENCE

ANTHROPOLOGY

First Farmers Still Resemble Ancestors

► DESCENDANTS of Europe's first farmers, who came to Greece from Asia Minor 6,000 years ago, still look very much like their ancestors, Dr. J. Lawrence Angel of Jefferson Medical College stated before the meeting of the American Association of Physical Anthropologists in Washington.

Dr. Angel and his wife took part in the excavation of the classic Greek city of Olynthus just before the war. At the end of the day's digging they would go, in late afternoon, to small cafes where the farmers gathered for relaxation. There they made photographs and took head and body measurements.

The farmers of this locality, they found, do not fit the average American notion of what Greeks look like. They were taller, less stocky, not so dark, had longer heads with more prominent cheekbones and more concave noses. In general, although these men were Greek in speech and nationality, their bodily type apparently identified them with the pre-Greek population whose skeletal remains have been discovered in the region.

Such survivals of ancient types can be found, as a rule, where at least partial isolation has tended to protect the community from admixture with other, later strains of population that have flowed into more open country.

Even so, Dr. Angel continued, the resemblance to the ancestral type is not complete. In some features the people of the region show inheritance from the less ancient classic Greeks of about 400 B. C.

Science News Letter, April 10, 1948

GENERAL SCIENCE

Half Million Given for Heart Disease Research

► MORE than half a million dollars for research in heart disease during 1948 will be given by U. S. and Canadian life insurance companies, through the Life Insurance Medical Research Fund. Hospitals, medical colleges, clinics and individual physicians are receiving grants.

Science News Letter, April 10, 1948

SCIENCE FIELDS

ELECTRONICS

Atomic Radiation Measured By Changing It into Light

➤ A DEVICE to measure atomic radiation by changing it into light is reported by Dr. James S. Allen of the Institute for Nuclear Studies, part of the new \$12,000,000 project of the University of Chicago, who has subjected it to thorough testing.

It is a German invention, the work of Dr. Hartmut Kallman of Berlin. The instrument tested was built by Dr. Allen from information furnished American scientists by government agencies investigating wartime atomic energy developments in Germany.

The device, called a scintillation counter, is a simple box containing a bit of fluorescent matter and a photoelectric cell surrounded by dry ice. Atomic particles admitted to the box produce bursts of light in the fluorescent matter. The light registers in the photoelectric tube where it is converted into electricity which can be amplified and measured.

The simple instrument is called an improved device for measuring radiation which may be a boon to researchers studying cancer and atomic problems.

Science News Letter, April 10, 1948

NUTRITION

Poor Diet Induces Pyorrhea But Teeth Remain Sound

➤ PEOPLE on such poor diets that they get pellagra or other vitamin deficiency diseases rarely have decayed teeth. But they are very susceptible to pyorrhea and as a result lose their teeth by the time they are 40 years old.

These findings have led to a new line of attack on the tooth decay problem by Drs. Tom D. Spies, Robert E. Stone, Samuel Dreizen and Henry Greene of Northwestern University, Chicago, and Hillman Hospital, Birmingham, Ala.

Many of the substances produced as by-products in the breakdown of the gums have decay-checking power, the scientists found. Test tube studies in which six of these substances were added to the saliva of persons susceptible to tooth decay showed the substances checked acid production in the mouth

and interfered with the growth of *Lactobacillus acidophilus*. This is the organism intimately associated with the development of tooth decay.

These findings led the scientists to a working theory that tooth decay and pyorrhea are antagonistic in their basic chemical nature and do not operate in the same mouth at the same time. The group is now "delving further into the interrelationships between diet, dental caries and periodontal disease (pyorrhea)," Dr. Spies reported at the meeting in New York of the Spies Committee for Clinical Research.

"We also hope eventually," he said, "to discover some substance or agent which is capable of being added to the fermentable foodstuffs of the diet and which will prevent or interfere with the ability of mouth organisms to break them down to lactic acid and thereby inhibit dental decay."

Science News Letter, April 10, 1948

AGRICULTURE

Triple Attack Used on Tough Tropical Weeds

➤ 2,4-D ISN'T enough for weeds in the tropics. It kills some but fails to harm others, so a triple attack must be used combining 2,4-D with another killer chemical known as pentachlorophenol and an aromatic oil left after gasoline refining, states Dr. A. S. Crafts in *Science* (Feb. 19). Dr. Crafts, a member of the agricultural faculty of the University of California at Davis, Calif., has been studying tropical weed problems at the Puerto Rico Agricultural Experiment Station at Rio Piedras, P. R.

The triple-threat mixture he describes will kill anything green that grows, but it can be applied close to the ground in plantings of bananas, coffee trees, sugarcane and pineapples in such a way that it gets on the weeds but not the leaves of the taller crop plants.

Science News Letter, April 10, 1948

ANTHROPOLOGY

Viking Medal Awarded to Harvard Anthropologist

➤ CITED as outstanding physical anthropologist of the year, Prof. Earnest A. Hooton of Harvard University was presented with the Gold Medal of the Viking Fund of New York and the Viking Prize of \$1,000 at the annual banquet of the American Association of Physical Anthropologists in Washington.

Science News Letter, April 10, 1948

INVENTION

New Telephone Machine Learns from Experience

➤ A MACHINE that can profit from experience has been invented.

It is a telephone switching machine developed by Phillips Gloie-lampen Fabrik in Eindhoven, The Netherlands. Usual switching machines go through the same blind search until the number which has been dialed is located and the call put through. But the new machine "learns" to distinguish frequently-called numbers from seldom-called ones.

When a number has been called frequently, the machine can make its connection more rapidly.

The new switching machine is similar in construction to an electronic computing machine. The invention can be applied to mathematicians' computing machines and to control devices such as the automatic plane pilot.

In a factory where machinery is run by control apparatus, the new machine would speed the most-used operations. And if new jobs were developed, the machine would learn these, too.

Studies of such machines also are underway in the United States.

Science News Letter, April 10, 1948

ANTHROPOLOGY

Geography May Influence Baldness in Young Men

➤ BALDNESS in young men seems to go by race, or perhaps by geography. At any rate, Dr. R. E. G. Armattee of the Lomeshie Research Center, Londonderry, Ireland, stated in a report sent to the meeting of the American Association of Physical Anthropologists that he has found more young men with bald spots in Sweden than in France. While premature baldness in Sweden is commonest among educated men, Dr. Armattee does not attribute it to excessive brain work.

This lack of hairiness in Sweden, however, works to the advantage of the opposite sex. Very few of the creamy-complexioned Swedish blondes have the hairy upper lips that often trouble their sisters in the British Isles.

"The need for the study of premature baldness from the point of view of occupation, etc., is self-evident, as many such men crowd hairdressing establishments in the hope of being cured," Dr. Armattee pointed out. "Millions of dollars are spent each year in the vain attempt to regain lost youthful looks."

Science News Letter, April 10, 1948

BOTANY

Flowers Have New Faces

Superior flowers are produced by mutations, drugs, controlled breeding. Radiance cosmos is judged top winner of All-American Selection trials.

By MARTHA G. MORROW

See Front Cover

► THOSE new types of cosmos and petunias, marigolds and snapdragons you or your neighbor planted this winter or early spring already have an exciting history. Some have just had their lovely faces changed a bit, others have been completely remodeled. But all have been many years in the making.

The ancestors of some new flower types, like many people today living in the United States and Canada, came from such distant places as the Netherlands, India and Japan. Others may have developed from types that for centuries have been growing on American soil, but only recently have been painstakingly crossed because of certain desirable characteristics.

Descendants of Freaks

Some are the descendants of natural freaks, called mutations, that gave new and desirable qualities to the flowers. Still others may have been treated with a poisonous drug, colchicine, to produce more hardy varieties.

Professional breeders today are working on new flowers that you will not see for another five or ten years. Those types that first became available this year have been carefully nurtured for a decade or more.

The big news in flowers today is the Radiance cosmos, a real bicolor cosmos. Its blossoms are deep rose, with a wide central zone of crimson surrounding the yellow central disk. This flower is top winner of the 1948 All-American Selection trials.

A number of new flower varieties each year are entered in this contest. They are planted at a number of locations representing various climatic regions of the United States and southern Canada. A committee of qualified judges in each region observes these plantings and rates each new flower on its merits. The new Radiance cosmos was found different from other cosmos varieties and superior to them.

The story of this new flower begins a dozen years ago when a rare new cosmos was brought from India to the United States. This plant was a natural freak or sport from the tropical Indian cosmos.

In this country the plant grew tall and bushy, it bloomed late and sometimes not at all, and its flowers were small. But the blossoms had a distinct touch of crimson at the center—it was the first true bicolor cosmos ever found.

The plant was crossed with an early and low-growing cosmos type. The first and succeeding generations of the cross were selected for earliness of blooming, great size of flower, erect growth, long cutting stems and, of course, the unique colored center. After over a decade of careful selection, the Radiance cosmos just placed on the market this year was developed by Bodger Seeds, Ltd.

The Pink Sensation petunia, another All-American winner for 1948, is a first-generation hybrid. To develop it, a single dwarf petunia which had excellent coloring but not too satisfactory plant habit was crossed with another single dwarf compact petunia which was especially desirable in this respect.

To prevent self-pollination, all of the male parts of the first petunia were removed and the plant was pollinated by hand, using special pollen taken from the second petunia. The "mother plant" was then covered with a cheesecloth cage to keep insects away and prevent chance pollination.

Offspring Like Parents

The first generation offspring from this cross turned out to possess the desirable color of one parent and the desirable plant habit of the other. In addition, being a first generation hybrid, the offspring possessed more extreme vigor than either of the parent plants. The plants could be counted on for uniform growth, the flowers were larger and the blooming season slightly longer.

As an experiment, seed from this first generation was planted. The second generation plants lacked many of the fine qualities of the first generation, and in the third generation had deteriorated even further. It thus became evident

that to maintain the exceptional vigor and uniformity of the plant, only first generation hybrid seed could be used.

Consequently, the seed of the Pink Sensation petunia developed by the W. Atlee Burpee Company is a true first-generation hybrid. Every seed on the market today is the result of hand pollination and this process must be repeated each year.

Plant selection undoubtedly began thousands of years ago, before human beings were aware of the great changes that can be brought about in a flower or vegetable. Bees and other insects made the first selections by pollinating some flowers, missing others.

History of Breeding

Our early ancestors probably were too busy obtaining the bare necessities of life to pay much attention to plants that had only beauty to recommend them. When man first began to grow flowers, he transplanted entire clumps from the woods to his yard. It was only natural for him to choose the loveliest.

Today the breeding process is man-directed. Seed experts select the parent varieties with the desired characteristics and make the cross by hand pollination. They prevent chance pollination by bees and other insects.

A flower breeder, reports Dr. S. L. Emsweller, in charge of the floricultural investigations of the U. S. Department of Agriculture, usually has more than one aim when selecting plants for cross-breeding.

He may want more and larger flowers on taller, sturdier plants than any now grown. He may desire new and interesting variations in color, shape and petal formation. He may seek to extend the flowering season with early and late blooming varieties. Disease resistance is often a major goal.

Snapdragons, carnations and lilies for use in tomorrow's gardens now are being produced at the nation's great agricultural research station, Beltsville, Md. Remodeling a flower is a tedious, painstaking task.

If a new model in chrysanthemums is desired, for instance, all the varieties now available are first collected, explains Dr. Emsweller. The various chrysanthemum types are grown and studied for



RADIANCE COSMOS—Top winner of 1948 contest, this superior cosmos has deep rose blossoms, with a wide central zone of crimson surrounding the yellow central disk.

outstanding qualities. Those showing promise are crossed. First the tiny disk florets in the chrysanthemum center are removed, as shown on the cover of this week's SCIENCE NEWS LETTER, then they are hand-pollinated.

At present 50 new chrysanthemum specimens show some promise, but much work remains to be done. Only three or four will eventually turn out to be good and beautify your home.

Controlled breeding is a tricky process. The first step is to transfer pollen from the anthers or pollen-bearing part of the flower to the stigma or pollen-catching member of that flower or of one with which it is to be crossed. In some plants the pollen is produced by the same flower as the seed or by another flower on the same plant; in some the pollen must come from another plant. A plant that is to be self-pollinated requires but little special attention. In most cases the plant or its flowers can be enclosed in some sort of cloth, cage or paper bag to protect them from all pollen except their own. Some plants merely need to be shaken several times a day to scatter the pollen. Bees or flies must be introduced into the bag of others to secure the best pollination.

When one flower is to be crossed with another, every precaution must be taken to safeguard the stigma from all pollen other than that of the desired type. The plant's own pollen-bearing parts usually are removed before pollen is shed.

The anthers may easily be removed from such flowers as morning-glory, gladiolus and phlox. In these the pollen-bearers are large and easily distinguished. With other flowers it is more difficult to cut out the anthers without injuring the stigma.

With zinnias, asters, cosmos and other composites, where the male parts are so tiny they can be seen only through a magnifying glass, the task is made easier by the fact that the tiny florets are not all alike. Those that stand out around the flower like sun rays usually have seed-bearing organs but do not bear pollen. The tiny florets crowded in the center bear both pollen and seed—these complete florets are removed. The remaining ray-florets bear seed when pollen from another flower is introduced. In producing the first Radiance cosmos, this task was attempted many times before a cross was successful.

Care must be taken in cross-pollinat-

ing all flowers. The forceps or other tools used to cut away unwanted parts should be kept absolutely clean. They are often dipped into alcohol after each use so that no pollen will be carried from plant to plant. The camel's hair brush used in applying the pollen is also cleaned.

Science News Letter, April 10, 1948

Science Service Radio

► LISTEN in to a story of a Venezuelan expedition on "Adventures in Science" over the Columbia Broadcasting System at 3:15 p.m. EST Saturday, April 17. Mr. Watson Davis, director of Science Service, will interview Dr. Dale Jenkins, member of a special technical mission connected with the Food and Agriculture Organization. Dr. Jenkins will tell about the vast untapped areas of palms from which edible oils could be commercially exploited.

Science News Letter, April 10, 1948

ASTRONOMY

To Measure Stars' Light

► AMATEUR astronomers of the future will not be satisfied with just telescopes, even relatively large ones. They will consider an instrument for accurately measuring the brightness of a star as necessary equipment, if they act on the suggestion of Dr. John S. Hall of Amherst College Observatory.

Each month thousands of useful observations of variable stars are made by amateurs. The value of this work can be greatly increased by a little extra equipment, Dr. Hall suggested. A light-sensitive instrument would take the guesswork out of such observations.

The photoelectric photometer is used with striking results by professional astronomers. A form of this instrument suitable for accurate observation of stars with a small telescope has been greatly simplified by war-inspired advances.

Dr. Hall spoke to amateurs attending the meeting of the Northeast Region of the Astronomical League. They had assembled in New Haven at the invitation of Dr. Dirk Brouwer, director of Yale University Observatory.

"The day is at hand when the amateur astronomer can attach a photomultiplier—weighing with its container no more than a few pounds—to his telescope," Dr. Hall pointed out. "He can carry this instrument to his backyard or to a nearby hilltop and make observations good to 0.01 magnitude."

The amplifier, meter and associated

batteries could be enclosed in a carrying case not much larger or heavier than a portable radio. The star-enthusiast would set this equipment on the ground, find the variable star in which he is interested and one or two stars of known brightness with which to compare it. These observations would be several times more accurate than if he had attempted to estimate their brightness by just looking at them through his telescope.

Dr. Hall and John F. Jewett at present are developing at Amherst College Observatory a compact, rugged amplifier for field use.

Science News Letter, April 10, 1948

PHYSICS of the 20th Century

By Pascual Jordan

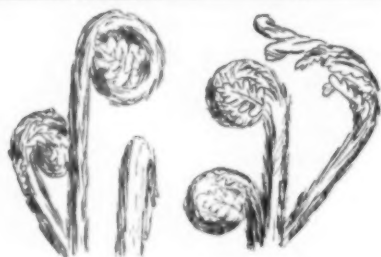
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Family Trademarks

► "FIDDLEHEADS" are the ferns' universal trademark. They all uncurl their new leaves in the same way, whether they are shy little wood-ferns in Nova Scotia or giant tree-ferns in New Zealand. Some botanists have likened them to bishops' croziers; this might do for the tree-ferns, but somehow for the smaller ferns of our own woods the more earthy name, fiddlehead, with its New England saltiness, seems more appropriate. They have fiddlers at Titania's court, but no bishops.

Not only does the main axis of a fern frond uncurl in this characteristic fashion, but the pattern is repeated in

every detail of development. Every leaflet uncurls exactly as the main stem does, and if the leaf is doubly or trebly compound, as it is in many fern species, these subdivisions come out as smaller fiddleheads, repeating the parent pattern.

Ferns have a second family trademark, less conspicuous than the fiddlehead but no less characteristic and interesting. If you will look carefully at a fern leaf, after it is expanded, you will find that the veins do not form an irregular net, as they do in many seed plants, or run in close parallel lines, as they do in others, but always divide in a two-pronged forking pattern.

Characteristic as these two trademarks are of the fern family, they are not a monopoly. Both the uncurling of the leaves and the forked venation are found in the cycads, a very ancient group of seed plants now found only in the tropics and subtropics. Forked veins can also be seen in the flat, wedge-shaped leaves of the ginkgo tree, sole survivor of another very ancient family, now native only to China but planted to some extent in American cities. Existence of these fern-like characters in seed plants is generally considered to be evidence of the fern or fern-like ancestry of these forms, and through them the later-developed and more highly evolved seed plants generally.

Science News Letter, April 10, 1948

EMBRYOLOGY

Study Pre-birth Patterns

► MAN is able to wink some six months before birth, although the wink "serves no immediate practical purpose."

This and other examples of how "amazingly early" behavior patterns are formed were given by Dr. Arnold Gesell, director of the clinic of child development, Yale University School of Medicine, at the Cooper Union Forum in New York.

Eight weeks after conception, when the human fetus is only one inch long, it responds to touch stimulation of the mouth region, Dr. Gesell stated.

"At 14 weeks it reacts with a patterned grimace; it is also able to swallow, to clasp its fingers, and to wink even though the eyelids are still fused and the wink serves no immediate practical purpose," he said.

At 20 weeks, when the future infant is only half way through its pre-birth development, it already has its full quota of 12 billion neurons, or nerve cells. "Intrinsic growth processes determine the

arrangement and relationships of these neurons, which in turn determine the forms and sequences of the eventual behavior," Dr. Gesell explained. "All this basic patterning, neurological and behavioral, is accomplished prior to and independent of experience. Such patterning operates not in utero, but throughout the whole postnatal cycle of mental growth, from germ to maturity. This is mental maturation."

Shakespeare's famous seven ages of man start with birth. Dr. Gesell presented seven developmental stages of human life as follows: "1. stage of the embryo, 0-8 weeks; 2. stage of the fetus, 8-40 weeks; 3. infancy, birth to 2 years; 4. the preschool age, 2-5 years; 5. childhood, 5-12 years; 6. adolescence, 12-20 to 24 years; 7. adult maturity.

"Man, of all creatures, has the longest period of relative immaturity. He is so complex that it takes him over 20 years to grow up, physically and mentally."

Science News Letter, April 10, 1948

Do You Know?

Calcium salts are an aid in preserving many fruits and vegetables.

The mineral *vermiculite*, used in lightweight concrete because it expands enormously when heated, makes a good bed in which to start seeds; plant food must be added because vermiculite contains no organic matter.

Trisodium phosphate, three pounds to a gallon of hot water, plus a cupful of ammonia, will remove old *whitewash* from a wall that is to be given a coat of paint.

The largest single source of American farm income is *milk*.

Recent advances in *fruit breeding* are partly due to exchange of new and old varieties between America and other countries.

TOXICOLOGY

1080 Poison Less Toxic to Some Birds than to Mammals

► THE sensationally successful poison for rats and other vermin, 1080, appears to be less toxic to certain kinds of flesh-eating birds than it is to mammals. This is a matter of considerable practical importance, since 1080 is used in control operations against small rodents that swarm on western rangelands, and also against coyotes; and useful predatory and scavenger birds might suffer secondary poisoning by picking up such poisoned animals, or by finding poisoned meat baits left for coyotes.

In tests conducted by the U. S. Fish and Wildlife Service, eagles survived doses of 1080 that were 22 times larger than the amount fatal to coyotes. Buzzards ate "unlimited quantities" of meat dosed with 1080 in five times the concentration customarily used on coyote baits. Magpies seem to be the only meat-eating birds likely to be endangered.

Baits of poisoned grain intended for rodents on the range are now dyed with bright colors. It has been discovered that seed-eating birds practically never touch grain of these "wrong" colors. Most of the lower mammals, including the rodents, seem to be color-blind; at any rate they pick up the poisoned grain without hesitation, no matter what its color.

Science News Letter, April 10, 1948

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GENERAL SCIENCE

Defend German Scientists

► GERMAN science leaders protected political suspects, including some of the few non-Aryans in Germany during World War II, by giving them work considered of "military importance," a famous German scientist asserted in defending his colleagues against charges of being "armorers of the Nazis."

Dr. Max von Laue, co-director of the Max Planck Institute and a leading anti-Nazi German scientist, described the "often fictitious" compliance of German science leaders with military demands in a communication to the *Bulletin of the Atomic Scientists* (April), published in Chicago. He objected to criticism of German scientists' role in the war, made by Dr. Philip Morrison, Cornell University physicist. Dr. Morrison had declared that German scientists, with a few exceptions including Dr. von Laue, had worked for the military in the war.

Pointing out that the directors of large German scientific institutions were forced to comply with Hitler's orders, Dr. von Laue told how some young specialists were protected from mobilization by larger research institutes.

"Sometimes too the possibility arose of protecting political suspects from con-

centration camps or worse, by assigning them research work of more or less 'military importance,' he reported.

Some of these cases included non-Aryan Germans, the scientist declared.

Dr. von Laue, who discovered X-ray diffraction by crystals, was an outspoken critic of Hitler and maintained his friendship with Einstein and other German exiles at a time when this was considered treason.

Much work by German scientists during the war was not of a military nature, he emphasized, pointing out that many unpublished manuscripts of German wartime work in physics are concerned with scientific developments unrelated to the war.

In commenting on Dr. von Laue's criticism, Dr. Morrison replied in the *Bulletin* that "many of the most able and distinguished men of German science . . . worked for the advantage of the Nazi state."

Dr. Eugene Rabinowitch, University of Illinois scientist and co-editor of the *Bulletin*, commenting editorially on the dispute, warned that discrimination against German scientists makes the job of preventing future wars more difficult.

Science News Letter, April 10, 1948

METALLURGY

Strange Behavior of Metals

► VERY strange behaviors of metals and other substances near absolute zero temperature, approximately 460 degrees below the Fahrenheit zero, are described by Dr. S. C. Collins, of the Massachusetts Institute of Technology, in a recent issue of *Science* (April 2), official publication of the American Association for the Advancement of Science.

Electrical properties of metals at these low temperatures are discussed. When cooled to close to absolute zero they lose practically all resistance to electric currents. Dr. Collins also discusses a form of liquid helium that climbs up and over the sides of a glass flask holding the fluid.

More than a dozen laboratories in the United States are now actively engaged in researches which extend into the liquid helium range, he reveals. This is close to absolute zero. There were only two such laboratories prior to 1946, he said.

The initial interest in very low

temperatures was created chiefly by the desire to liquefy such gases as nitrogen, oxygen, hydrogen and helium. Helium, the last to yield, was reduced to a liquid state in 1908. It is the lighter-than-air, non-combustible gas used in American balloons, and employed also in medical work and as a shield in arc-welding.

The equipment used in some of the laboratories to obtain very low temperatures is a complicated machine called a Collins helium cryostat, designed by Dr. Collins. This makes it possible to obtain very low temperatures easier than could be obtained before. Helium is the working fluid, and 12 of these machines are now in use in the United States.

It has been known, since the discovery by Kamerlingh Onnes in 1911, that certain metals lose their electrical resistance when cooled to near absolute zero temperatures. Scientists say they then have superconductivity. A satisfactory complete theory of superconductivity has

not yet been advanced, Dr. Collins declares.

An electric current, once started in a superconducting circuit, continues to flow without help from an electric cell or other source of potential. Such currents may be started in a ring of the material by electromagnetic induction. Currents flowing in a superconductor are generally confined to a very thin surface layer.

There are two forms of liquid helium, known as Helium I and Helium II. The only unusual feature of Helium I is the

fact that its viscosity decreases as the temperature decreases. Helium II, however, has many strange properties. When an open thermos flask containing it is surrounded by a larger thermos vessel, the Helium II liquid quickly distributes itself between the two vessels, establishing the same level in both. The liquid seems able to flow over the retaining wall as if by a siphon. This ability of one form of helium to climb the walls of a container has already been used as a one-step process to separate the two forms.

Science News Letter, April 10, 1948

Books of the Week

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C. In the case of free publications order direct from issuing organizations.

BREEDING LIVESTOCK ADAPTED TO UNFAVORABLE ENVIRONMENTS—Ralph W. Phillips—*FAO (Columbia University Press)*, 182 p., illus., paper, \$1.50. Concerned with the kinds of animals that thrive under harsh climatic conditions.

THE DIARY AND SUNDRY OBSERVATIONS OF THOMAS ALVA EDISON—Dagobert D. Runes, Ed.—*Philosophical Library*, 247 p., illus., \$4.75. Intimate glimpses into the daily life and thoughts of a great inventor.

ENCYCLOPEDIA OF HOME CARE AND REPAIR—William J. Hennessey and William W. Atkin—*Lantern*, 409 p., illus., \$3.95. If you want to know what is a gambrel roof, how to start a coal fire, or how to resurface a stucco wall with shingles, you will find the answers to these and many other questions all in alphabetical order in this book.

FUNDAMENTAL EDUCATION: Common Ground for All Peoples—Special Committee to the Preparatory Commission, UNESCO—*Macmillan*, 325 p., \$2.50. Here is not only stated the problem of world-wide illiteracy and ignorance, but methods are suggested for meeting it.

GEM TESTING—B. W. Anderson—*Emerson Books*, 256 p., illus., \$5.00. How to identify jewels, to distinguish one stone from another and the genuine from imitations.

GOOD NEWS ABOUT DIABETES—Herbert Yahraes—*Public Affairs Committee*, 32 p., illus., paper, 20 cents. Practical information for diabetics and their families and friends.

INTRODUCTORY PHYSICAL METALLURGY—Clyde W. Mason—*American Society of Metals*, 134 p., illus., \$3.00. Lectures before the ASM.

MASONRY SIMPLIFIED, VOL. I: TOOLS, MATERIALS, PRACTICE—J. Ralph Dalzell and Gilbert Townsend—*American Technical Society*, 367 p., illus., \$4.50. Of interest to homebuilders and architects as well as the workmen for whom it is intended.

MASONRY SIMPLIFIED, VOL. II: PRACTICAL CONSTRUCTION—J. Ralph Dalzell and Gilbert Townsend—*American Technical Society*, 405 p., illus., \$5.00. Covering all sorts of construction from chimneys to septic tanks and including ratproofing,

termite protection and other items important to the home planner.

PRECISION INVESTMENT CASTINGS—Edwin Laird Cady—*Reinhold*, 356 p., illus., \$6.00. Describing for the benefit of engineers a relatively new method for making parts and semifinished or finished products economically.

STRANGE PREHISTORIC ANIMALS AND THEIR STORIES—A. Hyatt Verrill—*Page*, 262 p., illus., \$3.75. Not intended as a scientific book, the purpose is rather to entertain with stories of the amazing creatures who walked this earth in times gone by.

TRIBES OF THE LIBERIAN HINTERLAND—George Schwab—*Peabody Museum*, 526 p., illus., paper, \$7.50, cloth \$10.00. The report of the Peabody Museum expedition to Liberia.

TWELVE WALKED AWAY—Marguerite Gaylord Tate—*Harcourt, Brace*, 150 p., \$2.50. The interesting narrative of an airplane crash in the Swiss Alps and the rescue.

USING SALTY LAND—H. Greene—*FAO (Columbia University Press)*, 49 p., paper, 50 cents. Telling how to reclaim much land not now useful for agriculture.

VITAMINS AND HORMONES: Advances in Research and Applications, Vol. V—Robert S. Harris and Kenneth V. Thimann, Eds.—*Academic Press*, 478 p., illus., \$7.50. Another in a series of critical reviews in this important field.

Science News Letter, April 10, 1948

BIOLOGY

Nobody Eats Terrapin Now, So Breeding Project Ends

➤ TERRAPIN in North Carolina waters—2,600 of them—are being put out on their own. They have been spoon-fed all of their lives—and some of them are up to 50 years old—but from now on they must forage for themselves.

The 2,600 diamondbacks represent the

last of the breeding stock used in a joint federal-state project to restore these gourmets' darlings, sadly depleted by decades of too-intensive hunting.

The project has been measurably successful, with a total of a quarter-million young terrapin restocked into waters along the South Atlantic coast.

Of late years the demand for terrapin has fallen off considerably. Congressional appropriations have ceased. So the breeding colony at Beaufort, N. C. will be turned loose to hunt for their own grub.

Science News Letter, April 10, 1948

CHEMISTRY

Citric Acid Made from Milk in New Process

➤ CITRIC acid, the acid of lemons and oranges, is made from milk in the process on which Joseph Szucs of Yonkers has received patent 2,438,136. He feeds a suitable mold on a solution of dried skim milk plus necessary mineral elements, and the mold secretes the acid.

Science News Letter, April 10, 1948

A trace of copper in stock feed has been found beneficial.

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✿ **PUSH TOOL** for the gardener has a single straight handle and rolls on a corrugated cylinder. It marks rows the desired distance apart, digs seed furrows the proper depth, and automatically covers the seed with earth. Attachable tines convert it into a cultivator.

Science News Letter, April 10, 1948

✿ **FINGER RING**, recently patented, permits the interchange of gem stones. The socket that holds the jewel has resilient detents, or holding devices, and lugs which permit the stones to be removed.

Science News Letter, April 10, 1948

✿ **LETTERED SIGNS** are quickly and accurately set by use of card-board-backed acetate letters and a composing stick in which the letters may be placed. After a line of letters have been set, transparent Scotch tape is laid over them. By this means the line may be removed.

Science News Letter, April 10, 1948

✿ **ELECTROMAGNET DEVICE**, home-built by one factory for first-aid treatment, removes metal splinters accidentally embedded in the arms or face of a machine operator. By means of a coil approximately a foot long, the magnet has strength to remove three-inch splinters.

Science News Letter, April 10, 1948

✿ **AUTOMOBILE SEAT COVER**, made of a special fabric, can be cleaned of grease daubs, such as shown in the picture, by a damp cloth or a soapy sponge. The fabric is also fire-resistant.



It is of rayon, cotton or glass fiber, coated with plastic solvents and resin.

Science News Letter, April 10, 1948

✿ **STAIR COVER** is a rubber mat shaped to lie on the horizontal stair tread, fit snugly the projecting edge and cover the riser. A groove in the outer surface of this recently patented covering permits close fit in the angle between tread and riser.

Science News Letter, April 10, 1948

✿ **PAPER-LIKE MATERIAL**, for electrical insulation, is made of almost pure asbestos and a mineral binder. It will not burn at any temperature nor is it affected by time and most chemicals. It can be processed into very thin sheets.

Science News Letter, April 10, 1948

✿ **HIGH-VOLTAGE CABLE** for electric currents, sheathed in a metal-reinforced polyethylene plastic instead of the conventional lead, contains three oil-paper-insulated conductors protected overall by the shield. The polyethylene is light-weight, moisture-proof and chemically inert.

Science News Letter, April 10, 1948

✿ **SHORTHAND** correction form is a transparent plastic sheet with shorthand characters in opaque red on it. A student can check his work by laying the form over a page of the same copy made by himself.

Science News Letter, April 10, 1948

Soiless Gardening Hobby Kit For You



Contains everything needed to start growing vegetables and flowers. Pots are easily assembled, chemicals to feed growing plants, shiny mica material for roots to cling to, seven kinds of specially selected seeds. Grow seedless fruit, sprout roots on stems, experiment with colorful plastic tents for light-growth tests.

Question Box

ASTRONOMY

What is the new theory of the high temperature of the sun's corona? p. 227.

Where is another instrument for infra-red light detection being built? p. 227.

BOTANY

How are superior flowers produced? p. 234.

GENERAL SCIENCE

What does the National Science Foundation bill provide? p. 228.

What was the main point brought forth by the letter written in defense of Dr. Condon? p. 229.

Why are scientists objecting to loyalty clearance procedures? p. 229.

GEOLOGY

What discoveries have been made about the age of the earth's crust? p. 231.

METALLURGY

How do metals behave near absolute zero? p. 238.

PUBLIC HEALTH

What are the advantages if the U. S. would join WHO? p. 230.

Photographs: Cover, p. 235, U. S. Department of Agriculture; p. 227, San Diego Zoo; p. 229, Boeing Aircraft Co.; p. 231, U. S. Navy.

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